

MARINE REVIEW.

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Average Freight Rates on Grain and Ore.

Iron ore was carried at very low rates during the past season, notwithstanding the heavy grain movement. The following table, prepared from daily records of charters in the offices of three vessel brokerage firms in Cleveland, shows the average "wild" rates as well as season contract rates from the different shipping ports for 1890 and 1891:

ORE SHIPPING PORTS.	Average single trips.		Average contract rates.	
	1891.	1890.	1891.	1890.
Ashland and Two Harbors.	\$1.055	\$1.135	\$.97	\$1.35
Marquette.....	1.021	1.078	.90	1.25
Escanaba and Gladstone.....	.833	.887	.65	1.10

Some of the companies had their ore carried at figures even lower than the above rates, as the average on contracts and "wild" rates combined would result lower.

Ashland shippers were especially fortunate in getting their ore down early and avoiding high fall rates, as shown by the low average on "wild" freights from that port. No single trip charters were made from Ashland after Oct. 31, and the closing rate was \$1.40. Chartering from Marquette ended with the middle of November, and the highest rate was \$1.35. On one Marquette cargo later in the month \$1.75 was paid but it was not a regular rate in the market. From Escanaba \$1.30, paid during the latter part of November, was the highest rate. One charter from Escanaba was made on Nov. 25 at \$1.50 but it was a deal between vessel owners who arranged to carry a contract load.

Fluctuations in rates during the season were as follows:

ESCANABA AND GLADSTONE.	MARQUETTE.	ASHLAND AND TWO HARBORS.
May 1.....\$.60	May 1.....\$.90	May 1.....\$1.00
May 29......55	June 9......80	May 9......90
June 24......65	June 26......90	June 9......80
July 6......75	July 17......95	June 19......90
July 21......80	July 21.....1.00	July 1.....1.00
July 30......85	July 31.....1.10	July 7.....1.05
Aug. 2.....1.00	Aug. 1.....1.0	July 28.....1.10
Aug. 4.....1.10	Aug. 6.....1.15	July 30.....1.15
Aug. 6.....1.00	Aug. 19.....1.10	Aug. 1.....1.20
Aug. 12......90	Aug. 20.....1.05	Aug. 8.....1.15
Sept. 10.....1.00	Sept. 9.....1.15	Sept. 10.....1.25
Sept. 23.....1.05	Sept. 22.....1.20	Sept. 22.....1.40
Sept. 26.....1.00	Sept. 26.....1.15	Sept. 26.....1.25
Oct. 3......90	Sept. 30.....1.00	Sept. 30.....1.15
Oct. 5......85	Oct. 8......80	Oct. 5.....1.10
Oct. 8......75	Oct. 26.....1.00	Oct. 10.....1.00
Oct. 10......65	Oct. 30.....1.20	Oct. 27.....1.30
Oct. 12......75	Nov. 1.....1.25	Oct. 29.....1.40
Oct. 23......85	Nov. 4.....1.35	Oct. 31.....1.40
Oct. 26......80		
Oct. 30......85		
Nov. 1......90		
Nov. 3.....1.00		
Nov. 6.....1.20		
Nov. 10.....1.25		
Nov. 12.....1.30		
Nov. 19.....1.25		
Nov. 22.....1.30		

The highest and lowest rates on corn out of Chicago for the months named during the past two seasons were as follows:

MONTHS.	SEASON OF 1891.		SEASON OF 1890.	
	Highest.	Lowest.	Highest.	Lowest.
April.....	1 3/4 cents.	1 3/4 cents.	3 1/4 cents.	1 1/4 cents.
May.....	1 3/4 "	1 "	1 3/4 "	1 1/2 "
June.....	1 3/8 "	1 "	2 1/2 "	1 1/2 "
July.....	2 1/2 "	1 3/8 "	2 3/4 "	1 7/8 "
August.....	3 "	2 1/4 "	1 3/8 "	1 1/8 "
September.....	3 1/2 "	2 1/2 "	2 "	1 3/8 "
October.....	2 1/2 "	1 3/4 "	2 "	1 1/4 "
November.....	4 1/2 "	2 3/4 "	3 "	1 1/2 "

These figures on grain were prepared from the daily trade bulletin of W. M. Egan, shipping and commission merchant, Chicago. Improvements toward the close of 1891 makes the average for the season better than that of 1890.

Steel Castings.

In his annual report, just received George W. Mellville chief of the bureau of steam engineering, United States navy, says: "I am again obliged to report that we are having most discouraging experience with steel castings, and that the statements in former reports concerning them can be repeated almost without change, for in some cases parts designed of cast steel have been built up of forged or rolled steel; in others the castings have been reinforced with plates of rolled steel; and in still others the castings have been made abnormally heavy and reduced to size in the shaper or planing machine. It can not be too strongly emphasized that the only reason for using cast steel instead of cast iron is that advantage may be taken of its greater strength to reduce weights. There can be no greater absurdity than to make steel castings of the same size as those of cast iron with a view to greater safety if the strength of the cast iron is ample; steel castings cost four or five times as much as iron ones, and it would be a deliberate waste of public money to use material in this way. The same is true of the plan of making pieces of several parts bolted together. I am loath to believe, however, that we shall be obliged to permanently abandon steel castings, for if the processes of manufacture can be improved so that absolute reliance can be placed on the product, the question of light machinery for war vessels is rendered much easier of solution. Moreover, it has always been found possible in other promising lines of work to ascertain the causes of first failures and to remedy them, and I am inclined to believe that in time this will be done for steel castings, since one firm has already successfully produced forms that the other makers said could not be cast, and their manager has stated that it is simply a question of time and the education of superintendents and workmen before we can safely count on the production in cast steel of any form now made in cast iron."

This bureau has always maintained that the best designer of marine machinery is the man who has learned by practical experience at sea and in charge of it, what to strive for and what to avoid. He knows that efficiency does not follow as a matter of course from complexity, but that simplicity, accessibility for inspection, facility in overhauling, and the smallest number of parts are the prime requisites. Many designs look very attractive on paper to the disastrously ingenious draftsman who has never seen them utterly fail to work at sea, but the trained engineer, who has lost hours of important time in repairing such puzzles, learns to avoid them almost by intuition.—Report of Chief Engineer Melville, United States Navy.

Next Season's New Tonnage.

The annual report of the tonnage building presented below, showing the new tonnage that will be put forth from lake shipyards and go into commission at the opening of navigation, contains much valuable information. While it shows about 2,000 tons less and \$441,000 decrease in valuation as compared with the report of last year, the fact that only freight carrying tonnage is included in the tonnage column this year while 2,350 tons of passenger and government service tonnage was put in last year, should be taken into consideration so that to be exact the freight tonnage building at the present time equals that building last year. The difference in valuation, \$441,000 less than last year is partly accounted for by the tendency of owners to build cheaper vessels. The total number of vessels building 45, capacity gross tons 76,000, valuation \$4,896,000 show another departure in lake ship building. This departure is demonstrated when the average carrying capacity of ten of the largest freighters in the 1890 report is compared with the carrying capacity of ten of the largest steamers of the same class in the 1891 report. The average for the former was 2,652, while that of the coarse freighters building this year is 3,200 tons. Of the 45 vessels building 32 are of steel and 13 are wood, while only 21 of 38 in the last report were steel, an increase of almost one-fourth in steel. Forty of the 45 vessels building are steamers, 3 barges and 2 schooners. This shows the decline of the sailing vessel in lake navigation. The information contained in the table will be found accurate, the only case where figures were not obtained from the builders or representatives was that of the American Steel Barge Company, but it was learned from parties close to the company that the eight vessels included for that concern would be launched between now and spring. The capacity in gross tons is computed for a draft of 16 feet.

The following table shows the work under contract Dec. 1 of this year as compared with the same date in past years:

	Number of boats.	Capacity gross tons.	Valuation.
1886-87.....	31	65,750	\$4,074,000
1887-88.....	60	108,525	8,325,000
1888-89.....	59	100,950	7,124,000
1889-90.....	56	124,750	7,866,000
1890-91.....	38	77,950	5,337,000
1891-92.....	45	76,000	4,896,000
Total.....	289	563,925	\$37,622,000

The following shows work under contract in lake shipyards:

BUILDERS.	CLASS.	CAPACITY, GROSS TONS.	VALUE.	FOR WHOM BUILDING.
Globe Iron Works, Cleveland	*Stmr	3,700	\$240,000	Minn. Iron Co., Cleveland
"	*Stmr	2,900	174,000	Sam'l Mitchell, Negaunee, Mich
"	*Stmr	2,750	178,000	Anchor Line, Buffalo
"	*Stmr	77,850	77,850	U. S. Gov't., light-house service
"	*Stmr	77,850	77,850	
Chic. Ship Bldg. Co., Chicago	*Stmr	3,700	240,000	H. M. Hanna, Cleveland
"	*Stmr	2,250	120,000	Minn. Iron Co., Cleveland
Clev. Ship Bldg. Co., Cleveland	*Stmr	2,500	150,000	Cliffs Iron Co., Cleveland
"	*Stmr	2,500	150,000	Lake Sup. Iron Co., Cleveland
"	*Stmr	68,000	68,000	U. S. Gov't light-house service
Detroit D. D. Co., Detroit	*Stmr	2,750	178,000	Anchor Line, Buffalo
"	*Stmr	1,600	120,000	Cliffs Iron Co., Cleveland
"	*Stmr	75,000	75,000	Clark Estate, Detroit
Union Dry Dock Co., Buffalo	*Stmr	2,750	178,000	Detroit Ferry Co., Buffalo
"	*Stmr	55,000	55,000	R. R. Co., Hammondsport, N.Y.
Wheeler & Co., West Bay City	*Stmr	3,500	230,000	Hollenback, Saginaw
"	*Stmr	2,400	125,000	McBrier, Erie
"	*Stmr	47,325	47,325	U. S. Gov't., light-house service
"	*Stmr	47,325	47,325	"
"	*Stmr	47,325	47,325	"
Steel Barge Co., Superior	*Stmr	3,300	180,000	Sam'l Mather, Cleveland
"	*Stmr	3,300	180,000	Canadian Pacific Ry. Co.,
"	*Stmr	3,300	180,000	"
"	*Stmr	3,300	180,000	Builder's account
"	*Stmr	3,300	180,000	"
"	*Brge	3,000	80,000	Samuel Mather, Cleveland, O.
"	*Brge	3,000	80,000	Builder's account
"	*Brge	3,000	80,000	"
J. Davidson, West Bay City	*Stmr	2,400	120,000	"
"	*Stmr	2,400	120,000	"
"	*Stmr	2,400	120,000	"
Craig Ship Building, Toledo	*Stmr	1,100	100,000	Michigan parties
Curtis & Brainard, Marine City	*Stmr	2,200	105,000	Builder's account
R. Holland, Marine City	*Stmr	1,400	60,000	Mills Tran. Co., Marine City
"	*Stmr	1,200	35,000	"
Morley Ship Bldg. Co.	*Stmr	1,200	70,000	John E. Mills
J. H. Ihnken, Algonac	*Stmr	700	22,000	Comstock Bros., Alpena, Mich.
Rieboldt & Wolter, Sheboygan	*Stmr	500	35,000	For coast service
Calvin Co., Garden Island, Ont	*Stmr	500	20,000	Builder's account
Capt Fairgrave, Hamilton, Ont	*Stmr	700	65,000	"
Montreal Trans. Co., Montreal	*Stmr	500	18,000	"
Polson Iron Wks, Owen Sound	*Stmr	500	18,000	"
Ont.....	*Stmr	.....	90,000	Canadian Government
		45	76,000	\$4,896,000

* Steel. † Passenger. ‡ Launched, but not yet in commission.

On account of the boat not being ready for the opening of navigation the Detroit Dry Dock Company's monster "straight-back" can not be included in the report but as the keel will be laid down as soon as work at the steel yard is completed it should be considered an addition to next season's tonnage. It is no small addition either as the boat will carry 5,000 tons on 16 feet draft, the cost to be about \$225,000. The including of the building of a steel boat by the Craig Ship Building Company, Toledo, is an item of news. She is to carry lumber between Lake Superior and Tonawanda. One of the barges, 118, included for the American Steel Barge Company has been towed one trip.

TOTAL LOSSES DURING 1891.

During the past season fifty-two vessels, valued at \$564,800 and having a carrying capacity of 27,496 gross tons, were totally destroyed and have left the lake service. In 1890 the number was only thirty-four and carrying capacity 16,306 gross, but the aggregate value of last season's total losses was \$757,000, a figure much higher than that of the season just closed. This summary of disasters is, of course, far from representing the total of losses in the lake marine, as it is made with a view of showing only such tonnage as has actually gone out of commission. The damage from strandings in the rivers, collisions, in which valuable freight carriers were sunk and afterward raised, and other causes, such as partial destruction by fire and from going ashore, would show an aggregate many times greater than that represented in the total losses, but it is impossible at this time to present accurate figures in this regard. It can be said, however, that on account of the great number of losses through strandings and collisions, few, if any of the insurance companies have made any money on the low rates at which the season's business was taken last spring, and the English underwriters are especially unfortunate, their proportion of the losses being very heavy in comparison with the amount of business taken by them. A summary of accidents through which vessels have gone out of commission follows:

	Number of Vessels.	Capacity gross tons.	Valuation.
Totally destroyed, all causes.....	52	27,496	\$564,800
" " by collision.....	5	4,070	119,000
" " by fire.....	12	4,038	161,800

Following is a list of the vessels lost, with names of owners, capacity and valuation:

NAME OF VESSEL.	OWNER.	CAPACITY, GROSS TONS.	VALUATION.
Schr. Atlanta.....	Eastman, Saginaw.....	1,083	\$ 28,000
Schr. W. C. Kimball.....	Kimball, Manistee.....	200	1,500
Schr. Mayflower.....	Leatham & Smith, Sturgeon Bay.....	416	3,000
Schr. Thomas Hume.....	Hackley & Hume, Muskegon.....	378	6,000
†Schr. Fayette Brown.....	M. A. Bradley, Cleveland.....	990	16,000
*Prop. Bay City.....	J. F. Rust, Cleveland.....	444	10,000
Schr. Topsey.....	C. O. Barker, Chicago.....	264	1,500
†Tug American Eagle.....	Dahlke, Cleveland.....	.....	3,000
*Prop. B. F. Ferris.....	Turner, Saginaw.....	.....	8,000
Schr. Niagara.....	Baird, Pictou.....	583	3,700
*Stmr. Wm. Alderson.....	Dunn, Pt. Burwell.....	.....	9,300
Schr. A. B. Pomeroy.....	Farwell, Detroit.....	700	8,000
Schr. Evaline Bates.....	Dykes, Grand Haven.....	421	1,500
Schr. Thomas Parsons.....	Mullens, Buffalo.....	630	5,000
Schr. Mediteranean.....	Kohnert, Chicago.....	431	5,000
Schr. W. L. Peck.....	Kinett Bros., Saginaw.....	651	3,500
*Prop. Winslow.....	L. S. T. Company.....	1,251	35,000
Schr. Frank Perew.....	Pierson, Cleveland.....	945	3,000
Prop. Daisy Day.....	Neilson, Pentwater.....	.....	.....
*Tug Kingsbury.....	Crosby, Muskegon.....	.....	3,000
†Schr. Wm. Young.....	Millen, Detroit.....	800	3,000
*Prop. Oscar Townsend.....	Root, Tecumseh.....	1,329	40,000
Schr. Lottie Wolf.....	Dunham, Chicago.....	604	5,500
†Schr. Birkhead.....	Mason, E. Saginaw.....	380	2,000
*Prop. Alpena.....	Westcott, Detroit.....	429	18,000
Schr. City of Erie.....	McKay, Milwaukee.....	397	1,000
Prop. Sovereign.....	N. W. Trans. Co., St. Catherines.....	568	12,500
Prop. Passaic.....	Blodgett, Detroit.....	618	12,000
Schr. Sawyer.....	Murphy, Cleveland.....	1,149	17,000
Schr. Stewart.....	Squire, Marine City.....	984	12,000
Schr. Bavaria.....	Fraser, Sarnia.....	779	7,000
Schr. L. C. Butts.....	S. T. Co., Sandusky.....	1,200	12,000
*Prop. Ruby.....	Ruby, Flumer.....	134	8,000
Schr. Montcalm.....	R. T. Co., Buffalo.....	535	5,000
Schr. Hattie Estelle.....	Estelle, Chicago.....	560	5,500
Prop. Oswegatchie.....	Chas. F. Spademan, Marine City.....	450	6,000
Schr. H. C. Potter.....	Mrs. Abbie Westbrook, Detroit.....	550	4,500
Schr. N. P. Goodell.....	S. N. Jex, Port Huron.....	500	2,500
Schr. Mediator.....	Rathbone et al., Chicago.....	600	5,000
Schr. Minnehaha.....	C. H. Lane, Buffalo.....	1,500	28,000
Prop. Ogema.....	Edward Smith, Buffalo.....	500	40,000
*Tug John A. Miller.....	Chicago.....	.....	4,000
*Tug Leviathan.....	S. Grummond, Detroit.....	.....	20,000
Schr. Nancy Dell.....	Gunderson et al., Sheboygan.....	200	1,500
Tug Mary Corrigan.....	Booth Packing Co., Bayfield.....	.....	10,000
*Tug Currier.....	C. E. Hanson, Superior.....	.....	1,500
*Tug Arbutus.....	W. Patterson, Wallaceburg.....	.....	5,000
Schr. H. M. Scove.....	Nelson et al., Milwaukee.....	550	3,000
Stmr. Jeanie.....	John Craig, Toledo.....	200	18,000
Schr. British Lion.....	Lucas, Windsor.....	150	800
Schr. G. C. Finney.....	Riordan, Buffalo.....	543	5,500
†Prop. Saml. Mather.....	Inter Lake T. Co., Cleveland.....	1,900	95,000
Totals.....	Number of vessels 52.....	27,496	\$564,800

*Fire. †Collision.

Carrying capacity is omitted in the foregoing where the loss of a passenger vessel or tug is noted.

Committed to a Seaboard Canal Project.

Oswego and the northwest—Duluth, Superior and other cities at the head of the lakes—are represented in force at the deep waterways convention, now in session at Detroit, and there is little doubt at this writing that the convention, in addition to endorsing the project for a twenty and twenty-one foot channel throughout the lakes, will ask that a commission of army engineers be appointed to consider the feasibility of a deep water outlet to the seaboard, and report on this great question which has attracted so much attention within the past year. The gathering in Detroit is one of the greatest of its kind ever held in this country. Full two hundred representatives of commercial organizations from St. Paul and Minneapolis to Albany answered to the roll call, and the delegates made up a most influential gathering; a gathering that Congress is bound to recognize, even though it be for political reasons alone.

With the opening of the convention Oswego presented fifteen delegates, who had brought with them an immense map, showing the lake region entire with the proposed canal around Niagara Falls and also the Huron-Ontario canal route. A canal from the lakes to tidewater is among the great aims of the commercial interests of the northwest, and the Oswego enthusiasts found earnest supporters in the delegates from that section, who were greatly in the majority, every lake port, iron mining town or lumber district in Minnesota, Wisconsin or Michigan being represented by one to four delegations in addition to the representatives at large from these states appointed by the governors. Governor Wynans of Michigan was one of the honorary delegates in attendance, and Ex-Senator Palmer was selected to preside over the gathering. The chairman sounded the key note to all deliberations of the assemblage when he declared that his interest in the convention was of a sentimental nature; there was nothing more selfish in it than in the case of the large number of lake vessel owners in attendance. They would make just as much money with shallow water as they would with deep water. It is the citizens of this country, producers and consumers, he said, who are benefited by the enlargement of the waterways. Then followed the selection of vice-presidents, one from each of the organizations and states represented, and the appointment of a committee on resolutions, which was made up in the same way in accordance with the representation. It was after this routine had been disposed of and the work of the committee to prepare resolutions and a memorial to Congress had begun that the northwestern delegates showed a disposition favoring an outlet to the Atlantic. They were a controlling power in the convention.

The chief business of the convention was the discussion of Gen. Poe's report which is included below:

On Jan. 20, 1891, Gen. O. M. Poe submitted to Gen. Thomas L. Casey, chief of army engineers, a report upon preliminary examination for a ship canal twenty feet in depth and of suitable width in the shallows of the connecting waters of the lakes between Chicago, Duluth and Buffalo. The report was in compliance with requirements of the river and harbor act of Sept. 19, 1890, and was presented to Congress by the secretary of war on Jan. 24, 1891.

In this report Gen. Poe strongly recommends the adoption of a twenty and twenty-one foot channel, instead of a channel of a uniform depth of twenty feet. As a reason for this, he calls attention to the fact that in quiet waters a channel depth of twenty feet is navigable for vessels of a draft closely approximating that depth, but that in localities which are subject to heavy seas, or endangered by loose boulders, a twenty foot channel would at times be impracticable for vessels with a considerable less draft. Gen. Poe then proceeds to estimate the cost of a channel of a uniform depth of twenty feet, in accordance with the act calling for such an estimate, but he reports also upon the cost of a twenty and twenty-one foot channel. After dealing with all of the detail pertaining to the extent of dredging necessary in the different parts of the connecting rivers of the lakes where shallow water exists, the report presents the following summary of estimates:

For a twenty foot channel as described at the respective localities:

Removing two shoals near Round Island.....	\$ 63,601.00
Removing obstructions at Sailor's Encampment.....	417,250.00
Removing obstructions at foot of Lake Huron, 1st proposition.....	95,531.40
Dredging at St. Clair Flats.....	313,559.40
Dredging at Grosse Pointe Flats.....	956,825.76
Dredging at mouth of Detroit river.....	532,317.60

Total for a twenty-foot channel.....\$2,379,085.16

For a twenty and twenty-one foot channel:

Removing two shoals near Round Island.....	\$ 85,487.00
Removing obstructions at Sailor's Encampment.....	556,333.00
Removing obstructions at foot of Lake Huron, 1st proposition.....	449,512.80
Dredging at St. Clair Flats.....	313,559.40
Dredging at Grosse Pointe Flats.....	956,825.76
Dredging at mouth of Detroit river.....	977,850.00

Total for twenty and twenty-one-foot navigation.....\$3,339,567.96

The report says in conclusion:

"The latter estimate is the one recommended in case the work is un-

dertaken, as surely it soon must be. I further recommend that the full depth be at once attained at each locality. To excavate to a less depth would involve going over the same area a second time, and with a reduced face, thus greatly increasing the cost. The cheapest way of obtaining results would be under appropriations applicable to the work generally, of sufficient amount to each grant to complete the channel at one or more of the localities.

"The order in which the improvements should be undertaken is, in my opinion, as follows:

- (1) Sailor's Encampment.
- (2) St. Clair Flats.
- (3) Grosse Point Flats.
- (4) Mouth of Detroit river.
- (5) Foot of Lake Huron.
- (6) Shoals near Round island.

"But this order of work should be modified, if necessary, to suit the actual conditions when appropriations are made. For instance, if less than \$200,000 be granted at one time, it might be advisable to apply a portion of it at once to the removal of the shoals near Round island.

"Although the sum of \$3,339,568 is a large one, yet the end to be gained by its expenditure is so important and so pressing as to fully justify its appropriation, even in one act. During the season of 1890 over 9,000,000 tons of freight passed through St. Mary's river, and more than 22,000,000 tons through the water-way between Lakes Huron and Erie. The increase in the available depth of channels on the lakes from nine and a half feet in 1852 to sixteen feet in 1882 developed this commerce, and it is only reasonable to expect that a further increase of four feet will be followed by corresponding increase in the shipping. The results are most notable perhaps in the character of the vessels employed in the carrying trade. These have increased in size and seaworthiness until they form a fleet which has not its equal upon any inland waters on the face of the globe. Of large capacity and great power, regardless of wind or weather, the steamers of the prevailing type bear their cargoes to and from ports a thousand miles apart, with the regularity and precision of railroad trains, each of them transporting at once more than ten ordinary freight trains. Surely such a commerce deserves every aid and encouragement that can be extended to it. Give it channels practically navigable upon a draft of twenty feet, and it needs no prophet to predict a wonderful growth, but only a prophet could foretell its degree. For nearly thirty-five years I have watched its increase, but neither I nor anyone else within my knowledge has been able to expand at the same rate. The wildest expectations of one year seem absurdly tame the next.

"For all the lakes and their communicating straits above Ontario, channels of the character described can be secured at a cost which seems trivial in comparison with the end to be gained, and I venture to urge, so far as I may properly do so, early and sufficient action toward the end indicated."

Iron Mining.

VALUE OF LEADING STOCKS.

Quoted by Chas. H. Potter & Co., No. 104 Superior St. Cleveland, O.

Stocks.	Par Value.	Bid.	Asked.
Cleveland-Cliffs Iron Company.....	\$100 00	\$.....	\$ 80 00
Champion Iron Company.....	25 00	.....	75 00
Chandler Iron Company.....	25 00	42 00	45 00
Jackson Iron Company.....	25 00	.....	105 00
Lake Superior Iron Company.....	25 00	.....	.....
Minnesota Iron Company.....	100 00	.....	81 00
Pittsburg Lake Angeline Iron Co.....	25 00	.....	145 00
Republic Iron Company.....	25 00	25 00	26 00
Ashland	25 00	.....	.....
Section Thirty-three.....	25 00	5 00	.....
Brotherton.....	25 00	2 00	.....

Chandler stock is still attracting most attention among the Lake Superior iron mining securities. It is quoted at \$45 but there is little if any of it that can be brought into the market with the present conditions of things. The company is thought to have nearly \$1,000,000 in the treasury, including profit on sales of the past season, and a dividend is again talked of. At the mine preparations are being made for the sinking of a fourth shaft, to be situated on the forty acres recently acquired. Quotations on stock of the Chicago & Minnesota Ore Company are discontinued, for the reason that a control of the property has passed to the Minnesota Iron Company. The Minnesota company's issue of stock is accordingly increased to \$16,500,000. The authorized capital is \$20,000,000. All conditions favor an advance of about 50 cents a ton on ore to be sold this winter for next season's delivery and it is, of course, reasonable to suppose that the market for stocks will improve with the announcement of sales.

Canada's Wrecking Laws.

EDITOR MARINE REVIEW:—My attention was drawn to an article in your paper of the 26th of November last, in which you refer to the wrecking laws of the lakes as barbarous, and a disgrace to both Canada and the United States. You also mention that "a forcible illustration of the inhuman portion of these regulations was shown last week at Goderich, Ont., when the crews of two vessels flying distress signals within sight of the harbor were known to be in great danger of going to the bottom of the lake, with their vessels already dismantled and laboring heavily in the most severe snow storm of the season. A small Canadian tug in the harbor was unable to venture out to their assistance, and the despatches announced that it would be necessary to leave them to their fate over night with the storm increasing in violence. Later when an American tug was found capable of risking the seas, these wrecking laws compelled the local authorities at the Canadian port to telegraph the minister of marine at Ottawa, hundreds of miles distant, before permitting the American tug to render assistance. The answer, of course, granted the permission, but it was seriously ridiculous when it was considered that there was no telling whether the distressed vessels were American or whether they belonged to the very port of Goderich itself. The answer came back from me as deputy minister of marine: 'Hire American tug to save life if none other available;' while the hours of delay resulting from these strange proceedings might have resulted in the loss of all on board the two boats."

While I know, from past experience, that you are always most anxious to state every case as accurately as possible, I beg leave to point out to you that there are some little inaccuracies in your editorial referred to. For example, our officer at Goderich, who has charge of the lifeboat, is a most careful man, but he is not a lawyer, and he did not know what the law on the subject was; otherwise he would not have telegraphed to Ottawa.

I herewith enclose* to you a copy of our law on this subject, from which you will see that we have no restrictions in saving life. An American tug, a Canadian tug, or any other tug can go in case of distress to save life in Canadian waters, incurring no penalty whatever. You will see in the third section of the act I enclose to you that all such cases are exempt, and Capt. Babb, who has charge of the lifeboat, should have saved life at all costs and hazards, and should not have lost a moment in telegraphing to Ottawa if life was really in danger; but he has a first-class self-righting and self-baling lifeboat, with a good crew, and I am not aware, from independent evidence, whether it was possible for him to go out to these vessels in distress. If it was not possible, there was nothing to prevent him from saving the lives of the people by any means he chose to adopt, and if he had actually saved life and incurred liability he would have been remunerated for such liability.

I think you are a little mistaken in criticizing the Canadian wrecking laws as barbarous and a disgrace to Canada. I assure you that they are neither barbarous or a disgrace to Canada, as any American tug can come at any time and save the lives of the Americans and Canadians in a sinking vessel, even in Canadian waters; and if valor has been displayed, it is usual for the Canadian government to make rewards in such cases instead of punishment. But an American tug is not allowed to come into Canadian waters and work at a wreck and take any cargo or tow rafts, as a matter of business; and the Canadian government has tried its best to induce the American government to open the lake coasting trade on their side, and Canada will probably follow suit and reciprocate on the Canadian side. But to say that the Canadian authorities or Canadian government would risk life being sacrificed for a point of etiquette, where it was in danger, and simply because there was no Canadian tug to render assistance, is a great mistake. The Canadian coasting laws are as liberal as they can be made, but the Canadian authorities do not wish to open the Canadian wrecking laws for business purposes, unless the American government is willing to open their towing trade as well as the wrecking laws. But I hope you will understand that the Canadian government has never punished a captain or owner of an American tug for saving life. Such a thing is unknown in Canada. If the circumstances, however, showed valor and bravery by Americans towards the crew of a Canadian vessel, the Canadian government would in all probability reward such valor or bravery.

I trust you will rectify these little points in your editorial at your earliest convenience.

WILLIAM SMITH

Ottawa, Dec. 8, 1891.

Deputy Minister of Marine, of Canada.

[*The law on the subject to which the Hon. Mr. Smith directs attention is the third section of the act of 1886 respecting the coasting trade of Canada, and is as follows: "The master of any steam vessel, not being a British ship, engaged, or having been engaged, in towing any ship, vessel or raft, from one port or place in Canada to another, *except in case of distress*, shall incur a penalty of four hundred dollars; and such steam-vessel may be detained by the collector of customs at any port or place to or in which such ship vessel or raft is towed, until such penalty is paid."—ED.]

Send 75 cents to the MARINE REVIEW for a binder that will hold 52 numbers.

Winter Navigation on Lake Michigan.

Special Correspondence to the MARINE REVIEW.

MILWAUKEE, Wis., Dec. 17.—With the close of navigation through the great inland waterways the east shore transit lines once more find themselves burdened with freight for the seaboard cities. This freight consists chiefly of flour and provisions, although an unusually liberal movement of grain is now promised via the Ludington route which is the only one provided with elevator facilities for transferring from boat to cars. The Grand Haven line is again being served by the steamers Wisconsin and Roanoke, while the Ludington line has the F. & P. M. steamers numbered from 1 to 5. Of these the No. 2 will handle freight out of Manitowoc almost exclusively and she may be assisted in the service from time to time by the No. 1. A third route to the east has been opened during the season by the establishment of a line of boats between Milwaukee and St. Joseph, but it cuts a very sorry figure because of the formation of a dangerous bar at the entrance to St. Joseph harbor. There are now three steamers in commission on this route, the City of Marquette, City of Fremont and Fountain City, the last named craft having been recently acquired at a purchase price of \$20,000. It is proposed to lay up and sell the City of Marquette and keep the City of Fremont and Fountain City in commission the year round; but in the light of the experience of the past six months the transit company will save a large amount of money by laying up everything until settled weather sets in next spring, as it has been impossible to average a round trip a week apiece with the boats since the advent of stormy weather early in November. The game of hide and seek which the steamers are playing at now is an expensive one to the company and amounts to almost prohibition with shippers. Shoal water and westerly winds also interfere with the movements of the Grand Haven and Ludington steamers but they manage to get around with tolerable frequency nevertheless. The west shore business of the Goodrich line is being attended to by the steamers Menominee and City of Ludington, although the latter will be the only one to run all winter.

The Inter Ocean Transportation Company's management has turned a leaf in the direction of economy. It has been the custom heretofore to maintain a department at the Bay View docks to do all needed repair work on the fine steamers of the fleet. Last winter as many as 150 men are said to have been thus employed, and the pay-rolls ran up to anywhere from \$2,500 to \$2,600 per month. In the light of the work accomplished, Manager Ricketson concluded that the company was paying altogether too much for "sojering," and accordingly decided to dispense with the plant and the services of superintendent. Capt. Joseph E. Yax, of the Maryland has been placed in charge of the fleet for the present winter, while all repair work needed will be done at the shipyards.

The steamer Ferdinand Schlesinger wound up the season at Buffalo last week with a shortage of 261 bushels on a cargo of 100,000 bushels of barley shipped out of this port. This reminds the correspondent that F. Kraus & Co., have not yet settled the 4,100 bushels shortage on four cargoes, referred to a short time ago.

Private advices from Duluth state that the steamers Alex. Nimick and John Mitchell and the barge Northwest have been loaded with wheat at that port, but the amount agreed upon for winter storage and spring delivery is not given.

[NOTE—Since receiving the above with reference to the new Milwaukee-St. Joseph line, we are informed that on account of the difficulties spoken of it is the intention of the company to run to Grand Haven this winter, arrangements having been made for the use of the Goodrich dock and with the Chicago & West Michigan Railway for the transfer of freight to their Benton Harbor connection.]

Will not let Canada's Marine Suffer.

Special Correspondence to the MARINE REVIEW.

KINGSTON, Ont., Dec. 17.—At a political meeting the other evening, Capt. Gaskin made an important statement. It was to the effect that in a recent interview with Premier Abbott, regarding the rebate of canal tolls on grain transhipped at Ogdensburg, the latter stated that it was the intention of the government not to let Canadian marine suffer. This is interpreted by mariners here to mean that the rebate will not be allowed and that this question will be discussed by the United States and Canadian governments during the reciprocity negotiations.

Thousands of railway ties will be shipped to New York state this fall if the harbor remains open.

The steambarge Van Allen, just gone into winter quarters at Oswego, made eighty-seven trips during the season and carried over 22,000,000 feet of lumber.

In her trial trip the sidewheel steamer Spartan made 15 miles per hour on eighteen and three-fourth revolutions to the minute.

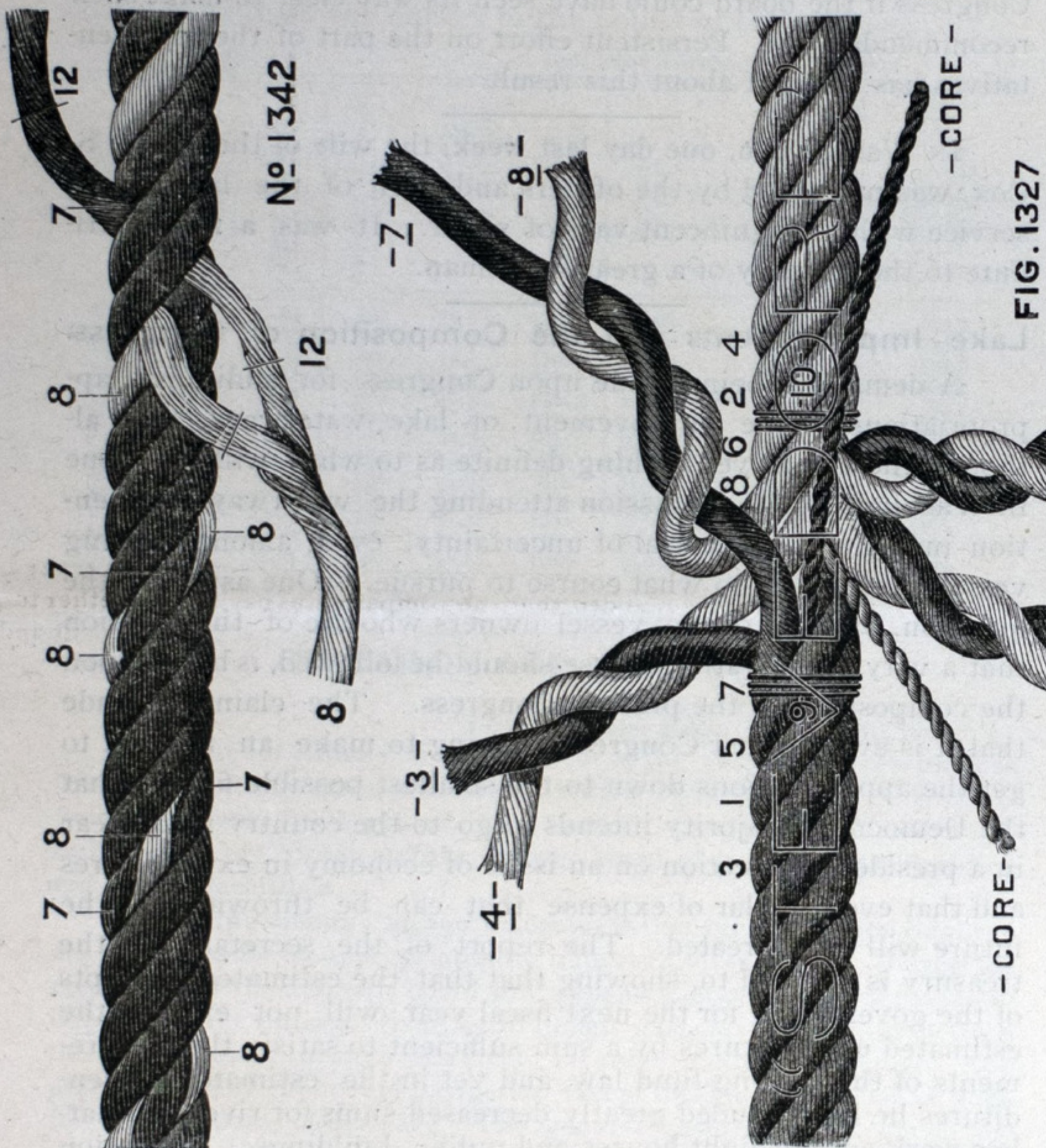
The schooner M. Neelon, owned at St. Catharines, was seized here recently by the customs officials for making a false report. After depositing \$400 the Neelon was allowed to go pending a decision from the government.

How to Splice a Rope.

Tie a piece of twine, 9 and 10, around the rope to be spliced, about six feet from each end, and then unlay the strands back to the twine. Butt the ropes together and twist each corresponding pair of strands loosely to keep them from being tangled. See engraving 1327.

The twine 10 is now cut, and the strand 8 unlaied and strand 7 carefully laid in its place for a distance of four and a half feet from the junction. The strand 6 is next unlaied about one and a half feet and strand 5 laid in its place. The ends of the cores are now cut off so they just meet. Unlay strand 1 four and a half feet, laying strand 2 in its place. Unlay strand 3 one and a half feet, laying in strand 4. Cut all the strands off to a length of about twenty inches, for convenience in manipulation.

The rope now assumes the form shown in Fig. 1328, with the meeting points of the strands three feet apart. Each pair of strands is successively subjected to the following operation:

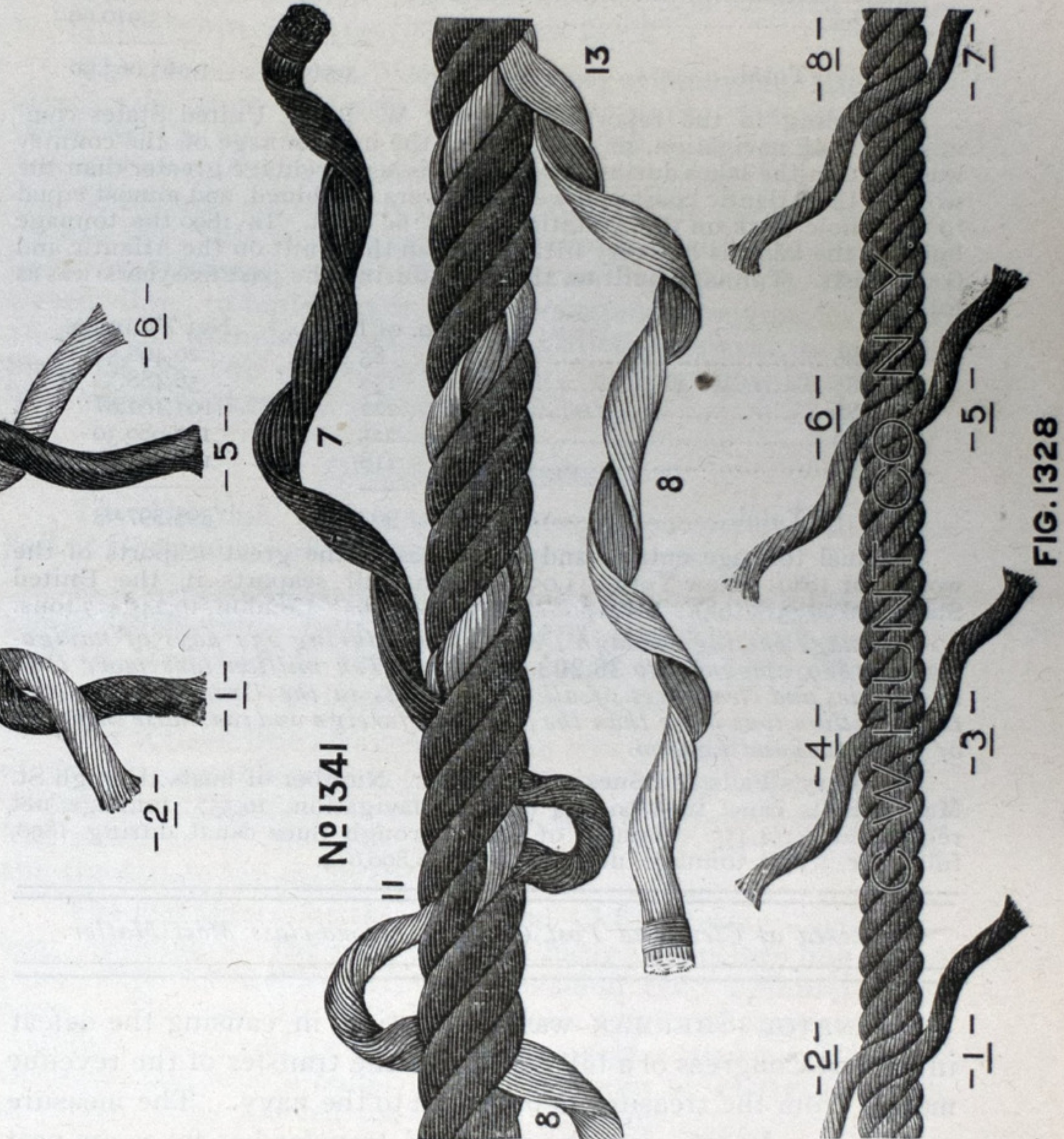


From the point of meeting of the strands 8 and 7, unlay each one three turns; split both the strand 8 and the strand 7 in halves as far back as they are now unlaied and the end of each half strand "whipped" with a small piece of twine. The half of the strand 7 is now laid in three turns and the half of 8 also laid in three turns. The half strands now meet and are tied in a simple knot, 11 (engraving No. 1341) making the rope at this point its original size. The rope is now opened with a marlin spike and the half strand 7 worked around the half strand of 8 by passing the end of the half strand 7 through the rope as shown in the engraving drawn taut and again worked around this half strand until it reaches the half strand 13 that was not laid in. This half strand 13 is now split, and the half strand 7 drawn through the opening thus made, and then tucked under the two adjacent strands, as shown in cut 1342. The other half of the strand 8 is now wound around the other half strand 7 in the same manner. After each pair of strands has been treated in this manner, the ends are cut off at 12, leaving them about four inches long. After a few days' wear they will draw into the body of the rope or wear off, so that the locality of the splice can scarcely be detected.

Following is a handy cordage dictionary:

Yarn, fibres twisted together. Thread, two or more small yarns twisted together. String, the same as a thread but a little larger yarns. Strand, two or more large yarns twisted together. Cord, several threads twisted together. Rope, several strands twisted together. Hawser, a rope of three strands. Shroud-laid, a rope of four strands. Cable, three hawsers twisted together. Yarns are laid up left handed into strands. Strands are laid up right handed into rope. Hawsers are laid up left handed into a cable.

A rope is: Laid, by twisting strands together in making the rope; Spliced, by joining to another rope by interweaving the strands; Whipped, by winding a string around the end to prevent untwisting; Served, when covered by winding a yarn continuously and tightly around it; Parceled, by wrapping with canvas; Seized, when two parts are bound together by a yarn, thread or string; Payed, when painted, tarred or greased to resist wet, and Taut, when drawn tight or strained.



Excelsior Marine Benevolent Association.

Capt. Thomas Jones has been elected treasurer of the Cleveland lodge to fill the position made vacant by the death of Capt. John Nelson. He will serve only the unexpired portion of the time. A general election of officers for 1892 will take place on the first Friday of next month.

Members of the association whose boats are in Buffalo joined with the Buffalo lodge in showing respect to the memory of Capt. James Carlisle, of the steamer Milwaukee, who died on the 10th inst. Capt. Carlisle was one of the charter members of the association. He was sixty two years of age and had followed the lakes for thirty-one years. He had been in the steamer Milwaukee for twelve years. The Buffalo lodge adopted a fitting tribute to his memory and attended the funeral in a body.

High Speed and Large Capacity.

A remarkable proof of the changes that are taking place in the shipping trade was recently afforded at Liverpool, when at auction sale the best offer that could be got for the City of Richmond, once a crack boat of the Inman fleet, was £6,600. The ship originally cost about £150,000. The explanation probably is that her engines are out of date, and the vessel consequently too slow and too expensive in the matter of coal consumption, to keep a place in the North Atlantic fleet. The demand now is on all hands for high speed and large carrying capacity.

MARINE REVIEW.

DEVOTED TO THE LAKE MARINE AND KINDRED INTERESTS.

JOHN M. MULROONEY, } PROPRIETORS.
F. M. BARTON, }

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210 South Water Street.

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The books of the United States treasury department contain the names of 3,510 vessels, measuring 1,063,063.90 tons in the lake trade. In classification of this fleet the lakes have more steamboats of 1,000 to 2,500 tons than the combined ownership of this class of vessels in all other sections of the country. The classification is as follows:

Class.	Number.	Tonnage.
Steam vessels	1,527	652,922.25
Sailing vessels.....	1,272	328,655.96
Canal boats.....	657	67,574.90
Barges.....	54	13,910.09
Total.....	3,510	1,063,063.90

According to the report of William W. Bates, United States commissioner of navigation, 46 per cent. of the new tonnage of the country was built on the lakes during 1889. This is a percentage greater than the work of the Atlantic coast and western rivers combined, and almost equal to the whole work on the Atlantic and Pacific coast. In 1890 the tonnage built on the lakes is but very little less than that built on the Atlantic and Gulf coasts. Tonnage built on the lakes during the past five years was as follows:

	No. of boats.	Net Tonnage.
1886.....	85	20,400.54
1887.....	152	56,488.32
1888.....	222	101,102.87
1889.....	225	107,080.30
1890.....	218	108,515.00
Total.....	902	393,597.03

Annual tonnage entries and clearances of the great seaports of the world, for 1889: New York, 11,051,236 tons; all seaports in the United States, 26,983,315 tons; Liverpool, 14,175,200 tons; London, 19,245,417 tons.

Tonnage passing through Detroit river during 234 days of navigation in 1889, amounted to 36,203,606 tons. Ten million tons more than the entries and clearances of all the seaports in the United States, and three million tons more than the combined foreign and coastwise shipping of Liverpool and London.

St. Mary's Falls and Suez canal traffic: Number of boats through St. Mary's Falls canal in 1890, 234 days of navigation, 10,557; tonnage, net registered, 8,454,435. Number of boats through Suez canal during 1890, full year, 3,389; tonnage, net registered, 6,890,014.

Entered at Cleveland Post Office as Second-class Mail Matter.

SENATOR SHERMAN was instigative in causing the defeat in the last Congress of a bill calling for the transfer of the revenue marine from the treasury department to the navy. The measure passed the house, and the proposed transfer has for years past been favored by secretaries of both the navy and treasury, as well as the great majority of officials in both of these branches of the government. Petitions favoring a bill prepared for the present Congress with the same end in view, are again being circulated and a very large number of signatures have been secured among the shipping interests of Cleveland and other lake ports in Ohio. These petitions are addressed to Senators Sherman and Brice of Ohio, and as they come direct from an important part of Senator Sherman's constituency, they should be of some weight. There can be no doubt of improvement in the revenue marine service in event of its transfer to the navy, and any measure that tends to relieve the treasury department of such branches as have outgrown connection with the finances of the government will meet with favor from the merchant marine.

AT PORT HURON a few days ago, John Cole, a sailor on the steamer Scotia, was taken from his boat to a hospital, fatally injured. After death, his wife, who resided at Ironville, O., informed the hospital authorities that she was too poor to attend to burial of the remains, and in accordance with Michigan laws the body was turned over to one of the medical institutions of the state. The sailors in the merchant marine of this county built

up through contributions from their earnings in past years a marine hospital service that has since cared for them in time of sickness. The government a few years ago undertook the maintenance of this service, but it is nevertheless a fact that the institution is one founded by the sailors themselves. It certainly seems strange that a decent burial cannot be provided for the sailor who is worthy of care in time of illness.

In its estimate to Congress the light-house board includes an estimate of \$8,600 to acquire an outfit and maintain four lights now maintained at Ballard's reef, the Lime-Kilns and Bar point. The board has also authorized the expenditure of \$60,000, heretofore appropriated for Eleven-foot shoal, for the purchase of two light-ships, one for service on the shoal and the other to be placed where the board will determine. It is more than probable now that both of these projects will receive the approval of Congress, as would have been the case in the last Congress if the board could have seen its way clear to make such recommendations. Persistent effort on the part of the representatives has brought about this result.

In Washington, one day last week, the wife of the late S. S. Cox, was presented by the officers and men of the life saving service with a magnificent vase of silver. It was a fitting tribute to the memory of a great statesman.

Lake Improvements and the Composition of Congress.

A demand is being made upon Congress for additional appropriations for the improvement of lake waterways, and although there is as yet nothing definite as to what will be done in Washington, the discussion attending the waterways convention indicates a great deal of uncertainty, even among leading vessel interests, as to what course to pursue. One aspect of the question, brought out by vessel owners who are of the opinion that a very conservative course should be followed, is based upon the composition of the present Congress. The claim is made that it is evident that Congress is going to make an attempt to get the appropriations down to the smallest possible figure; that the Democratic majority intends to go to the country next year in a presidential election on an issue of economy in expenditures and that every dollar of expense that can be thrown into the future will be so treated. The report of the secretary of the treasury is referred to, showing that that the estimated receipts of the government for the next fiscal year will not exceed the estimated expenditures by a sum sufficient to satisfy the requirements of the sinking fund law, and yet in the estimated expenditures he has included greatly decreased sums for river and harbor work and for light-houses and public buildings. Attention is also directed to the large amount of river and harbor work at Philadelphia, Galveston and St. Mary's Falls, already authorized and contracted for, and for which appropriations must be made. In view of these facts, it is claimed that it will certainly be a hard struggle to wrest anything liberal from Congress for new projects, and it is on these grounds, partly, that serious objection is raised in some quarters to agitation of the question of an outlet to the seaboard. On the other hand, a great deal of good work in the way of enlightening members of Congress on the needs of the lake marine was accomplished during last summer, through the excursions on lake vessels of congressmen and newspaper representatives from all parts of the country. The great justice of all demands for improvements on the lakes has been demonstrated. Appropriations thus far received, either for river and harbor work or for light-house purposes, are meagre in comparison with the great saving in transportation charges and the long line of coast involved. This side of the question is foremost with another and an important element among the vessel owners, who believe that the present Congress is favorably disposed toward the lake marine, and that anyhow the demands that are just should be presented and urged with the earnestness of which they are deserving. It is to be hoped that before the time arrives for active work before the committees of Congress a definite plan of action will be arranged upon which all interests may be united, as the aim sought is in the end for the general welfare.

Report of Experimental Trip,

MADE UPON SCREW STEAMER E. P. WILBUR TO THE BUILDERS,
THE GLOBE IRON WORKS COMPANY, CLEVELAND, O.,
[BY GEO. C. SHEPARD.]

To get components of Table IV, used a combination of Tables I and II in such a manner that from Table I, I got revolutions per minute and speed in miles per hour for a certain hour, and from Table II, indicated horse power from diagrams taken during that hour. Generally the diagrams showed more revolutions per minute than the revolution counter and to get indicated horse power corresponding to revolutions per minute as shown in Tables I and IV, determined indicated horse power per revolutions from diagrams, plotted curve of results and from this curve computed indicated horse power for revolutions in Table IV. This is the basis of all computations to make the table.

The values of the several elements in relation to speed of vessel are plotted on Plate VIII. The speed in miles per hour is the abscissæ to the other elements ordinates. The points shown are numbered according to number of column in table, and in drawing the curves assumed two or three speeds to be correct and drew the curves to the points of those speeds.

TABLE IV. Indicated Thrust and Coefficient.

Reference in Table I.	Revolutions per Minute.	Miles per Hour.	Apparent Slip per cent.	Indicated Horse Power per revolution.	Indicated Horse Power.	Indicated Thrust.	Constant $C: \frac{D^2}{V^3}$ I. H. P.	Constant $K \frac{L \cdot M \cdot S \cdot X \cdot V^3}{I. H. P.}$
10	79.1	1.04	.133	16.3	1290.	29,900	385.6	759.5
11	80.5	14.33	.129	17.23	1387.	30,870	390.2	768.5
13	76.6	13.46	.141	14.4	1103.	26,410	397.4	782.8
14	76.8	14.15	.099	14.57	1119.	26,715	455.	896.3
19	81.7	15.54	.070	17.93	1464.8	32,873	461.	908.9
20	80.4	14.97	.089	17.15	1378.8	31,445	437.	861.
37	72.	12.66	.140	14.25	1026.	26,120	523.	1192.
38	71.	12.66	.128	13.65	969.	25,016	554.	1268.
43	77.	13.81	.123	17.08	1315.	31,304	529.	1208.
44	73.	13.	.120	14.80	1084.	27,219	536.	1221.
47	77.7	13.92	.124	17.42	1353.	31,918	527.	1175.
51	76.5	13.46	.139	16.80	1285.	30,790	490.	1120.
52	76.6	13.58	.132	16.88	1293.	30,940	512.	1168.

[TO BE CONTINUED.]

CHICAGO LAKE INTERESTS.

WESTERN OFFICE, MARINE REVIEW,
No. 210 So. Water Street, CHICAGO, ILL., Dec. 17.

The state of Illinois is represented at the waterways convention in Detroit by Ex-Congressman Ralph Plumb of Streator, D. S. Berry of Savannah, Capt. J. S. Dunham, Hon. Homer J. Carr, Capt. A. W. Allyn and L. E. Cooley of Chicago and the Chicago board of trade by Jesse Spalding and Hugh MacMillan.

The feeling among Chicago delegates is that the convention ought to ask Congress for an appropriation to improve Chicago river. During the coming year the drainage board will expend a large amount of money in improving the Chicago river for drainage purposes—that is, to increase the flow of water through the river, in order to dilute sewerage. The drainage board cannot aid navigation except incidentally as may be done for the purposes of drainage. The general government of course, will never make any appropriations to aid Chicago in her drainage project. But the two working together could certainly make a vast improvement in Chicago river. The government appropriations would be used towards increasing the capacity of Chicago river in the aid of navigation. It may be urged in the convention that Chicago river is a purely local affair, but this does not seem to be the case. It is as much a part of the lake marine as St. Clair river or the Sault locks. The grain traffic particularly, which is handled on Chicago river, is something in which Chicago is not half so much interested as the producers in the west or consumers in the east. It is certain that the city of Chicago will never spend the money required to put the river here in decent shape for the purposes of navigation. The general government expended large sums in improving Calumet river, the rival of Chicago river. Every reason which has been urged for the Calumet river appropriation can with equal force be urged for the improvement of Chicago river by the general government. Where one ton of freight is handled on the Calumet, fifty tons are handled on the Chicago river. It may be that the convention will fight shy of this question, but it is certainly one of the most important which will be brought before that body.

The honor of making the last sailing for the lower lakes from Chicago for the year goes to James Davidson's steamer City of Berlin. With the weather the way it has been for a week past, a much larger grain trade would have been done, had shippers cared for boats, but they had made their arrangements for the close of navigation, and business is difficult to turn out of established ruts. Had shippers cared for boats at the existing rates of freight and insurance, at least half a million bushels more would have been shipped during December than there was.

Around the Lakes.

B. B. Inman of Duluth proposes to equip his tugs with fire pumps and contract with the cities of Duluth and Superior for their services when needed. The scheme seems practical.

Despatches from Chicago, Thursday, gave information that the Rube Richards had been burned out forward and that the H. A. Tuttle had also been damaged by fire, amount of damage not being stated.

A feature of the report of the light-house board that is of special interest to vessel owners is the recommendation that \$8,600 be appropriated for maintaining lights at Bar point, Ballard's reef and the Lime-Kiln's crossing, all points near the mouth of the Detroit river, where for years past these aids to navigation have been maintained at private expense.

The Detroit Free Press persists in claiming that the steamer Susquehanna's engines will be rebuilt during the coming winter, while Buffalo people, who are in a position to know, claim that the boat is doing good work and that her engines will not be rebuilt. It is difficult to understand the reason for such a claim in Detroit when no authority is given for it.

The Manistee Iron Works Company of Manistee, Mich., has closed two more contracts for marine engines. One is with T. Wilce & Co., of Chicago for new cylinders 15 and 30x20 inches, new motion and independent air pump and condenser, to replace the compound engine now in the barge Hattie Perue. A boiler 7½x12 feet, Otis steel, to carry 140 pounds of steam is also being built for this boat. The other contract is with F. A. Hagan of Green Bay, to build a new steeple compound engine, cylinders 18 and 34x30 inches, for the barge Philetus Sawyer, to take the place of the two 18x20-high pressure engines now in the boat. The engines taken out are offered for sale.

Cleveland Matters.

The Original Cleveland Tug Men's Association will give a ball at Germania hall on the evening of the 21st inst.

It is expected that the government steamer Amaranth, light-house construction boat for the Ninth and Eleventh districts, will be launched at the yard of the Cleveland Ship Building Company toward the latter part of the week.

The Wilson line steamer Wallula was the last boat to arrive at Buffalo, reaching that port on Monday, the 14th inst., with wheat from Chicago, on which the gross freight was \$3,465. The steamers of this line are among the first out in the spring and the last to lay up in the fall.

The machinery for the Cleveland Cliffs Mining Company's boat, building at the yard of the Chicago Ship Building Company, will be supplied by the Cleveland Ship Building Company. The engines will be vertical triple expansion with cylinders 15, 25 and 42 inches by 30 inches stroke. The boat will have one Scotch boiler, 13 feet diameter by 11 feet 6 inches in length, to be allowed 160 pounds of steam.

Ludlow Manufacturing Company is the name of a corporation organized with a capital stock of \$100,000 to take up the business of manufacturing the Ludlow coal bucket, which is being generally adopted in the lake shipping business on account of the saving secured in its use from breakage of coal. The officers are B. D. Babcock, president, W. E. Ludlow, vice-president and general manager, and W. R. Huntington, secretary and treasurer. The office of the company is at 121 Superior street. The buckets are now being made at the works of the McMyler Manufacturing Company and the size in most cases will be increased to four tons capacity, on account of the introduction of the large McMyler derricks, in connection with which they will be used.

"It is not an uninteresting thought to consider the exceeding slowness with which at times the mind arrives at full comprehension of things, which when finally understood lead to almost incalculable benefits. Take for instance, the spreading of oil upon water, to stay even the action of, or the forming of dangerous waves, breakers or combers. The fact that oil would still the waters was known 2,000 years ago, yet only within a very few years has it dawned upon the modern mind to make use of this life and property saving means so easily at our command. Look if you may find some things of great value to you in these pages." The foregoing is the introduction to the 1892 catalogue of the American Ship Windlass Company, Providence, R. I. It is handsome enough and valuable enough to pay you for sending your address for a copy, if one has not already been received.

Affairs in Admiralty.

A decision from Judge Ross of the district court, northern district of California, indicates the disposition of the federal courts in salvage matters. The bark Don Carlos, worth \$15,000, with a cargo of nitrate soda worth \$34,000, stranded near San Francisco. The libellant's tug boat Alert went to the assistance of the stranded boat. There was a rolling swell sufficient to swing the bark around broadside to the shore, when it was reasonably certain that she would soon become so banked with sand as to render her removal impossible. The captain of the Alert refused to render assistance, except on the master's agreement to pay \$8,000 for pulling him off, which, after trying to obtain better terms, he agreed to do. Thereupon a hawser was made fast, and the tug began pulling, and prevented the bark from swinging. Soon afterwards the Relief and the Reliance, two powerful tugs also owned by libellants, arrived, and the master of the bark agreed to pay \$2,000 additional for their assistance. In about two and one-half hours they succeeded in pulling her off. The value of the tug Alert was \$25,000, of the Reliance \$30,000 and the Relief \$50,000, and the ordinary expense of maintaining the three in readiness for salvage service about \$7,500 a month. None of the tugs were in any danger. The court held that the demand for \$8,000 was exorbitant, and the agreement should be disregarded, and that \$5,500 should be awarded for the services of the three tugs, to be apportioned among the ship, freight and cargo, according to value.

Judge Simonton of the United States district court, South Carolina, decided a case a short time ago, in which a schooner, the Anna, carrying freight, ran on a snag and sank in shallow water, near the landing for which she was destined, but, after part of the cargo had been taken off, she was raised and taken to the landing, and the balance of the cargo delivered. The court held that in ascertaining the owner's liability under the statute providing that his liability for the loss of property shipped on the vessel shall not exceed the value of the interest in the vessel and her freight then pending, if the loss be occasioned without his privity or knowledge, the value of the vessel should be determined at the period when the voyage actually terminated, and that this was when she reached the landing, and not just after she had sunk. It was also held that in ascertaining the owner's liability in such a case, he should be allowed a deduction for the expense incurred in raising the vessel.

Points Worth Remembering.

The British admiralty some time ago issued the following memorandum on the use of oil at sea for modifying the effect of breaking waves:

On free waves—i.e., waves in deep water—the effect is greatest.

In a surf, or waves breaking on a bar, where a mass of liquid is in actual motion in shallow water, the effect of the oil is uncertain, as nothing can prevent the larger waves from breaking under such circumstances; but even here it is of some service.

The heaviest and thickest oils are most effectual. Refined kerosene is of little use; crude petroleum is serviceable where nothing else is obtainable, but all animal and vegetable oil, such as waste oils from the engines, have great effect.

A small quantity of oil suffices if applied in such a manner as to spread to windward.

In cold water the oil, being thickened by the lower temperature and not being able to spread freely, will have its effect much reduced. This will vary with the description of oil used.

The best method of application appears to be, hanging over the side, in such a manner as to be in the water, small canvas bags capable of holding from one to two gallons of oil, such bags being pricked with a sail needle to facilitate leakage of the oil.

The position of these bags should vary with the circumstances. Running before the wind they should be hung on either bow and allowed to tow in the water. With the wind on the quarter the effect seems to be less than in any other position, as the oil goes astern, while the waves come up on the quarter. Lying-to, the weather bow and another position farther aft seems the best places from which to hang the bags, with a sufficient length of line to permit them to draw to windward while the ship drifts.

For boarding a wreck, it is recommended to pour oil overboard to windward of her before going alongside. The effect in this case must greatly depend upon the set of the current and the circumstances of the depth of water.

For a boat riding in bad weather from a sea anchor, it is re-

commended to fasten the bag to an endless line rove through a block on the sea anchor, by which means the oil is diffused well ahead of the boat, and the bag can be readily hauled on board for refilling if necessary.

In General.

In her overhang of bow and counter Herreshoff's crack yacht Gloriana is a wonder. Over all she measures 70 feet while her water line is only 45 feet. Her beam is about 13 feet and her draught 11 feet. Her masts and spars are enormous.

It was given out after a meeting of the steel rail manufacturers in New York last week that orders amounting to about 600,000 tons had been placed among the various mills of the country. This is about three times the amount ordered at this time last year.

A five-masted auxiliary sailing ship is being built by Messrs. Russell & Co. on the Clyde. The departure seems strange for the reason that sailing vessels with auxiliary steam power were built twenty years ago and were a complete failure from a financial standpoint.

Production of pig iron again shows an increase according to figures prepared by the American Manufacturer of Pittsburgh. On Dec. 1, the production was 193,009 tons a week, as compared with 192,743 tons on Nov. 1 and 181,818 tons on Oct. 1. The production since July 1 has been at the rate of 181,234 tons a week, against 173,427 tons during the corresponding period in 1890.

Collectors of customs are again calling attention to the law passed last winter, which requires that in case of collision between two vessels, it shall be the duty of the master or person in charge of each vessel to stay by the other vessel until he has ascertained whether she is in need of assistance or not and to render assistance if possible, giving also full information as to name, ownership, port of hail, etc.

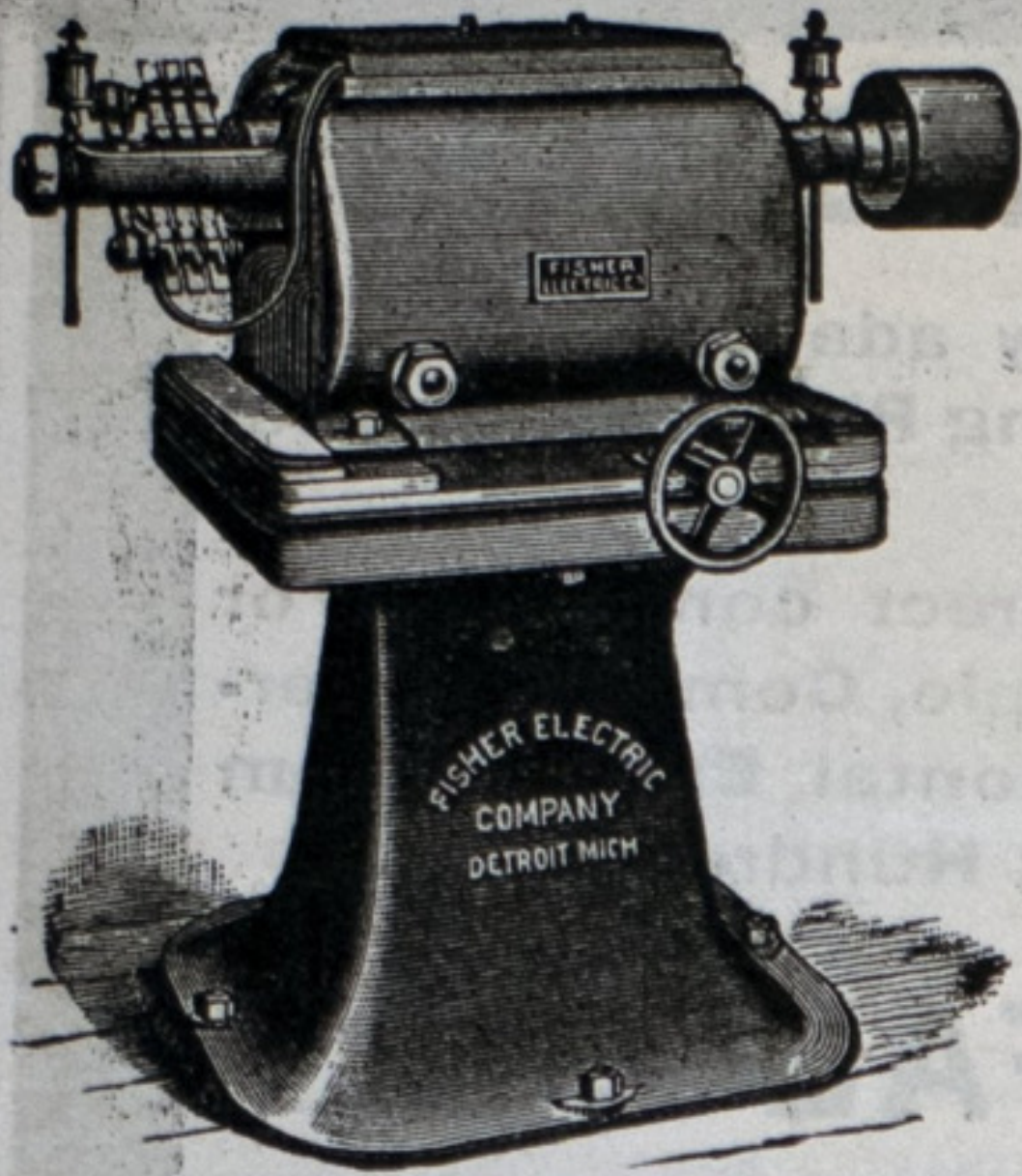
The Journal Industry of San Francisco says that Mr. George Dickie of the Union Iron Works of that city some years ago prepared at the request of the board of trade, a design for a type of cheap freight carrier, which he now proposes to resuscitate, adding late improvements in steam power. The Journal advances the opinion that the new boat will prove superior to the McDougall whaleback.

The popular belief that a vessel goes faster with the tide than against it is not borne out by facts. The Norwood steam launch made two runs recently with the tide and against it, and there was just one-fifth of one second difference in her speed: this might be owing to many causes. The same results has been noticed in trials of foreign torpedo boats. The Norwood's quickest mile on her recent trial trip was made in 2 minutes 12½ seconds.—The Engineer, New York.

The Edison Phonograph tells a story about the captain of the schooner Maggie painting the name of the vessel on her bow while lying in port at Edison a short time ago. The captain could not reach high enough from the float, and did not feel like putting out a swinging stage, so he reached down over the sides to do the lettering. When he had finished the job he thought he had succeeded in doing a very artistic piece of work, and went ashore to view it, and this is the monogram that met his gaze: "Maggie."—American Shipbuilder.

Those two foolhardy mariners, Captains Josiah W. Lawlor and Wm. A. Andrews, who started from Boston June 21, to race across the Atlantic in dories, have apparently not had enough of it yet, though Andrews was reported when rescued to have promised the Lord if ever he got safely ashore not to tempt the fates again in such a manner. Both were in New York last week prospecting for other boats in which to start nevertheless, and propose now to cross in folding canvas sloop-rigged craft, 12 feet long, 44 inches beam, 14 inches deep amidship and 22 inches deep forward and aft. Capt. Lawlor will call his boat the Christopher Columbus and expects to start in May from St. John's, Newfoundland. Capt. Andrews will christen his boat the Flying Dutchman and start from the Battery in New York.—Marine Journal.

For the benefit of readers of the REVIEW who are on the lakes over half the year, a special rate of \$1 for six month's subscription is made. The paper will be sent to any part of the United States or Canada at this rate and the address may be changed at any time. Order by mail before leaving boat for the winter.



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[Signature]
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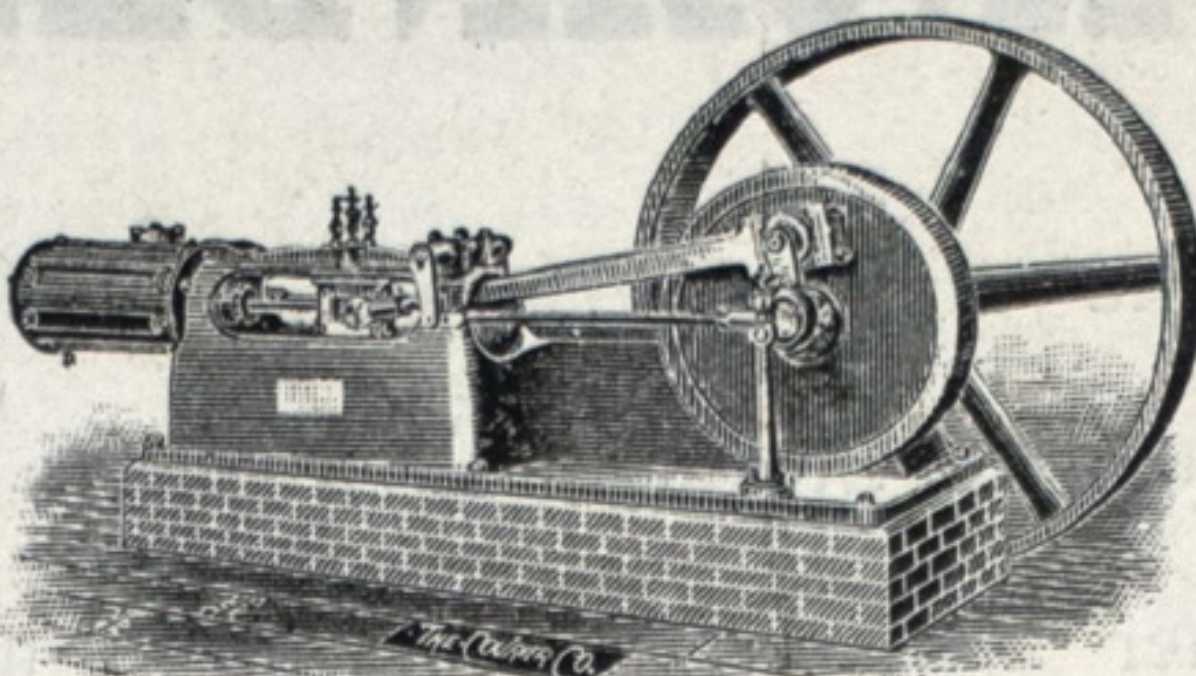
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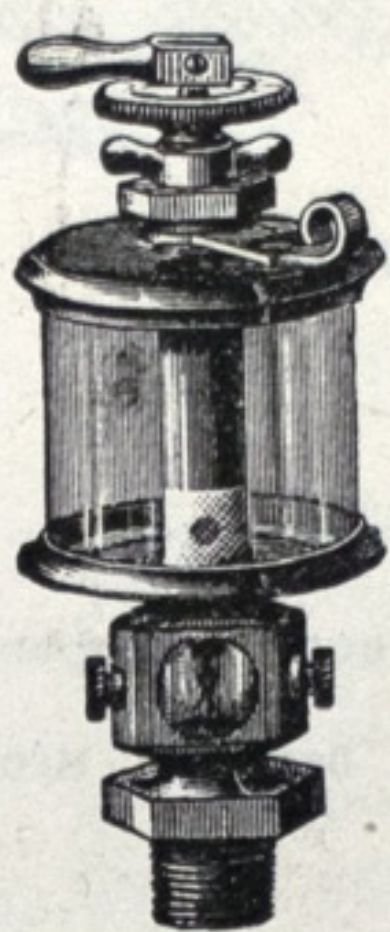
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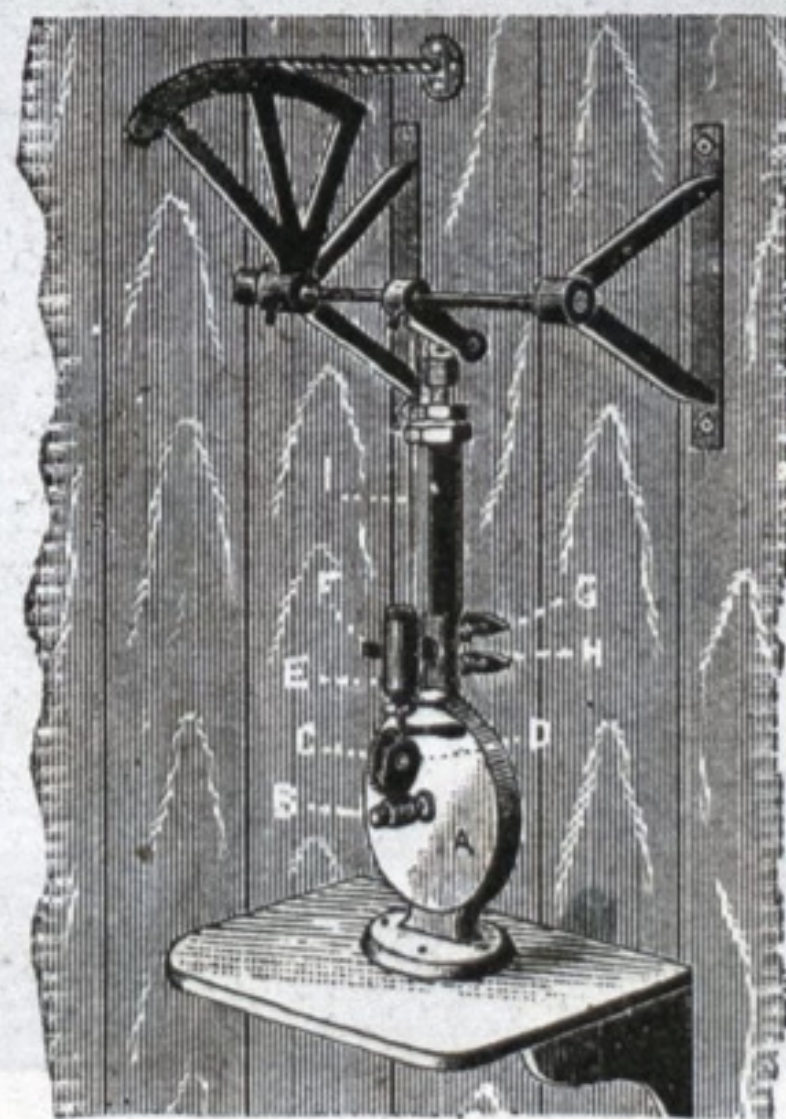
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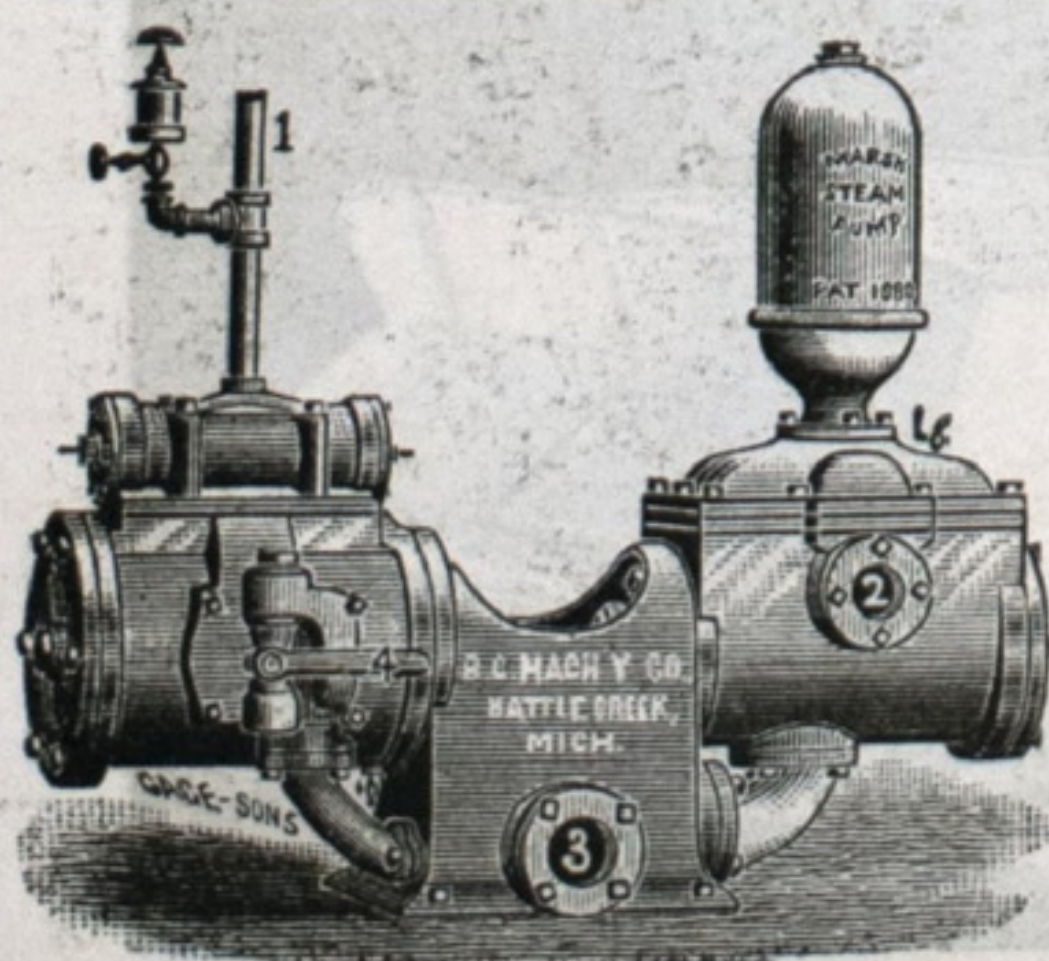
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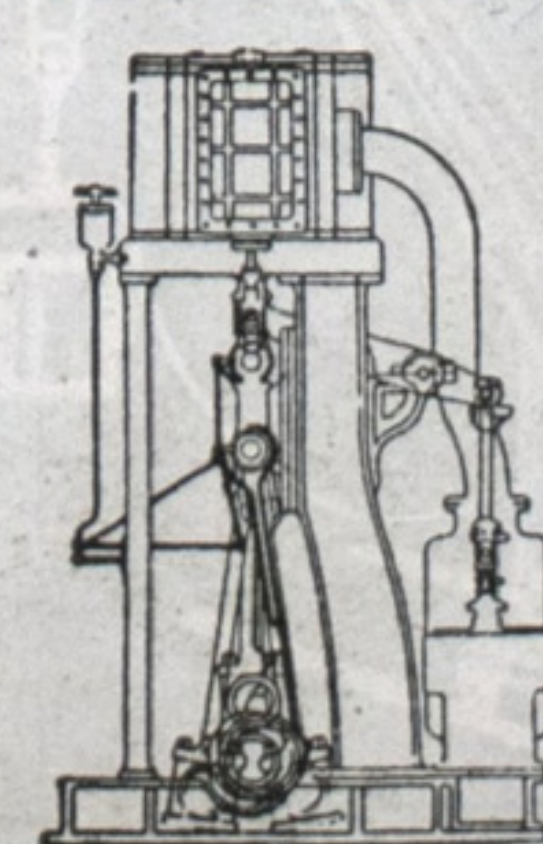
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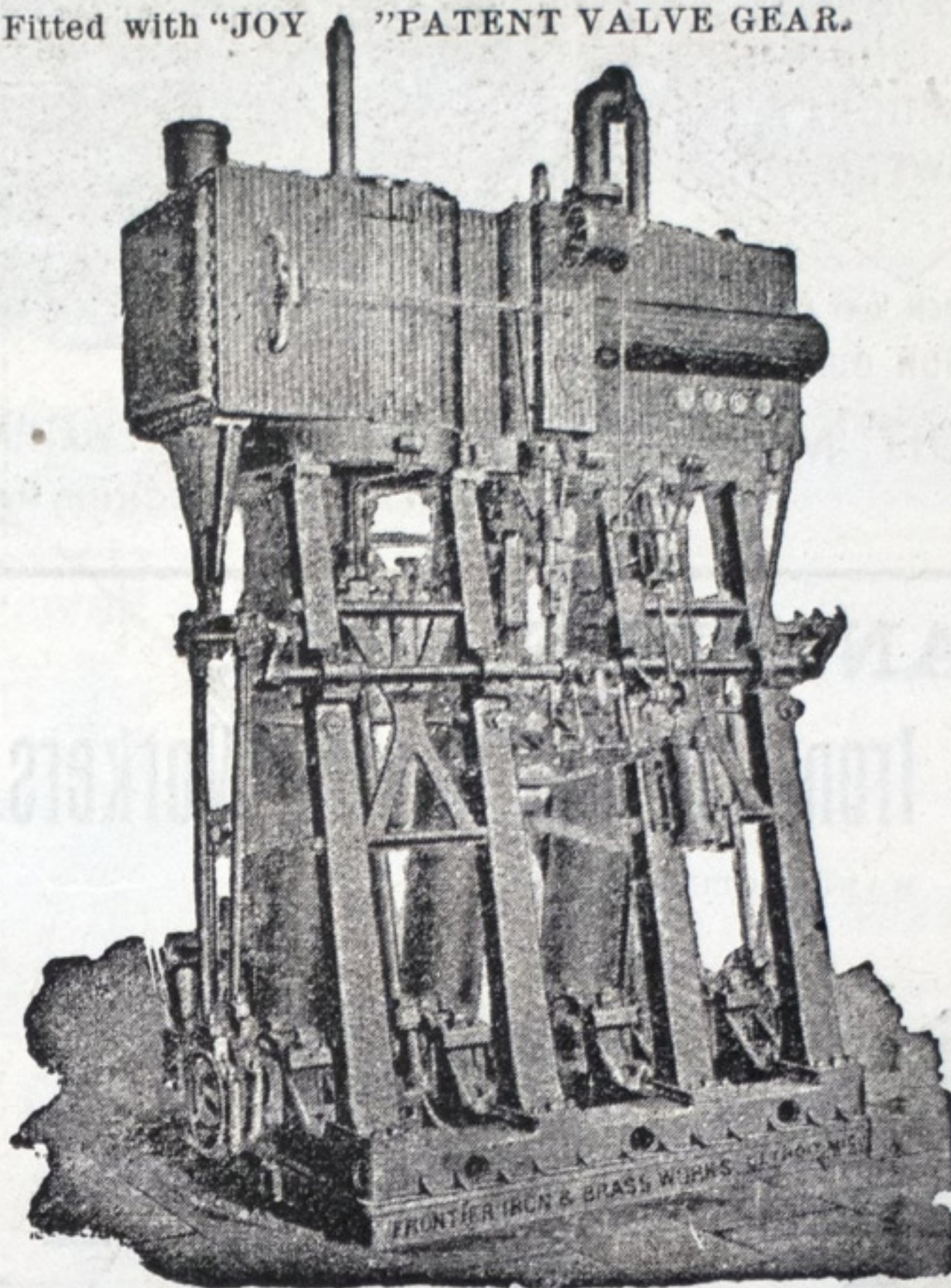
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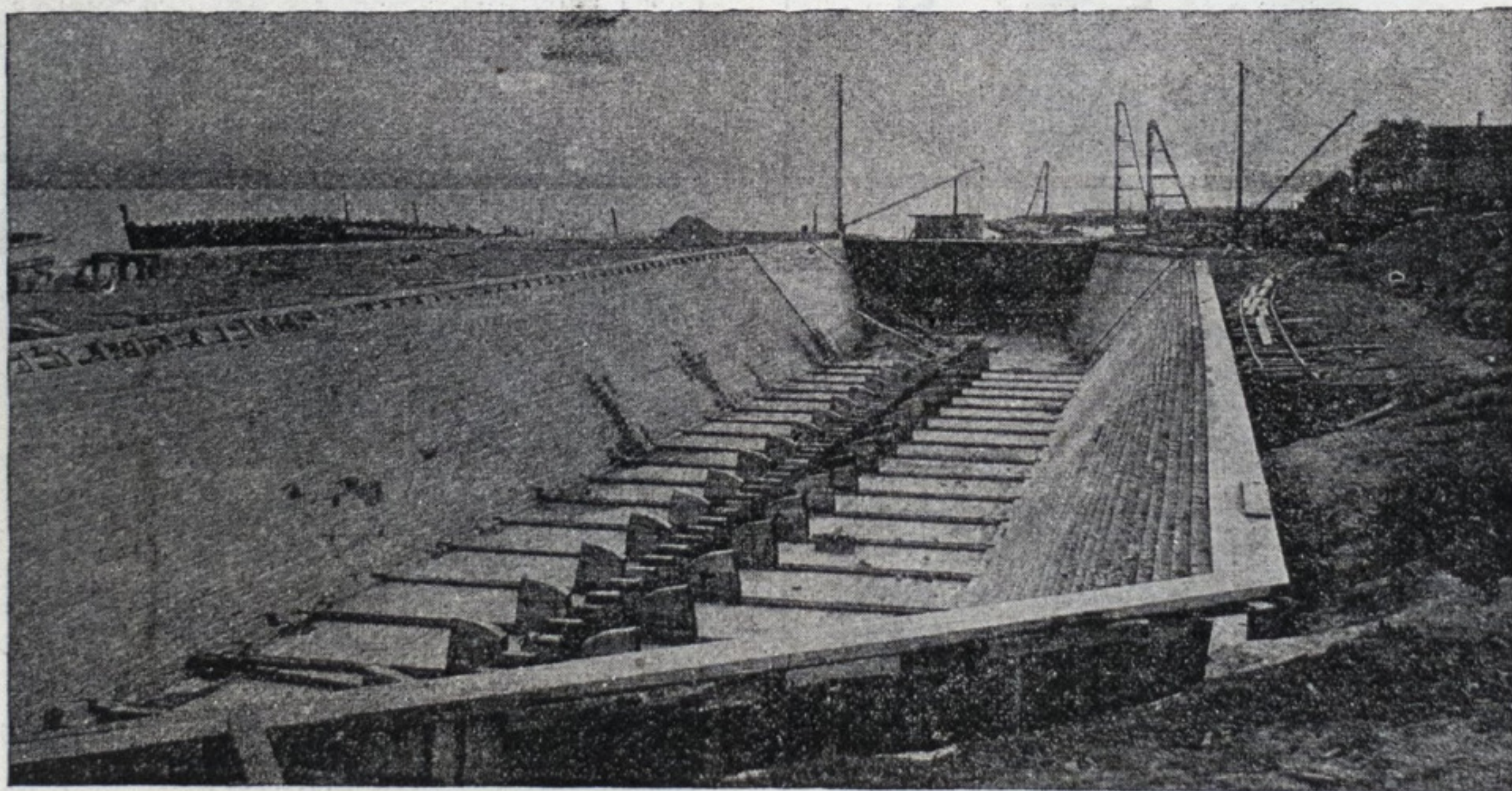
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